

## **Report on the Sixth Thai-Danish Expedition 1968**

by

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The sixth Thai-Danish Expedition which took place during the months February-March 1968 aimed at exploring some rather inaccessible mountain massives of the Tenasserim Range along the Burmese-Thai border.

During earlier expeditions it had been our experience that the best chances of finding new or rare species of plants was through investigations in the higher altitudes preferably above 1000-1200 m. This is especially true of the orchids. But apart from a few by now rather well known localities (Doi Suthep, Khao Yai), it was quite complicated and time consuming to reach such places.

Only a few years ago we used to take our equipment by jeep or truck as far as the trails would permit into the foothills. Here 20-30 bearers had to be hired in the nearby villages and we started our slow walk uphill, camping at night where water was available. Often when reaching 8-900 m altitude the bearers from the valleys would want to return and new bearers had to be found among the hill tribes. At long last reaching the highest altitudes we would usually have trouble with finding water for the many people or we would run out of provisions so the bearers wanted to go home and we had to finish our work in a hurry and start the long way back.

The 1968 expedition was otherwise. With all our equipment we were picked up at an airstrip by a Forest Department helicopter, and a few hours later our camp was established on a mountain ridge. Before the helicopter was back at base we were in radio telephone connection with Bangkok and could give information about our position and our work plans. The expedition at first had its base

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1) Botanical Museum of the University in Copenhagen.

2) Forest Herbarium, Royal Forest Department, Bangkok.

in Mae Hong Song, the north westernmost town in Thailand which had recently been connected by road from Chiang Mai through Mae Sarieng thereby making it possible for the gasoline trucks to reach the helicopter base. Later the base was moved southward, first to Mae Sarieng then to Tak. After study of the new excellent maps (1:50,000) we had beforehand singled out five localities to be approached by means of the helicopter. Some few collections were made on excursions by jeep from the helicopter bases in Mae Hong Song and Tak. The position of the localities will appear from the accompanying map and the annexed list of collections. A short description of the localities is given below; as an introduction a report on our general method of work may be of interest.

Before starting we would together with the pilot and the navigator have a very careful study of the maps to get the fullest possible knowledge of the landmarks guiding us to the place chosen. Due to the high altitude of most localities selected which would lower the load maximum of the helicopter we would usually have to make the trip two or three times. First one or two of the scientists would go together with the two radio operators; on the first trip we would carry only the radio station and some water and emergency provisions. Generally, it might take us some time to find a spot on the mountain ridge sufficiently level and free of trees to permit landing. The helicopter would stay on ground only a minute or two while we unloaded the radio equipment. Then, while the helicopter returned to base, the radiomen erected the antenna and started the generator and we went looking for water and if necessary did some preliminary clearing of the landing spot. Before the helicopter had reached the base we had radio contact and could inform our comrades if it would be necessary to bring water along on the next trip, — this would usually be the case. Only a very few hours after our first touching ground the helicopter would have returned once or twice with the rest of the group and our camp equipment and scientific material, a tent camp established and we could start work. During the following days we had radio contacts regularly with the helicopter crew down at the valley base and with Bangkok, and when we felt we had finished our



job we called the helicopter back to fetch us and in the evening we could have our chinese dinner in the local restaurant after having sent the baskets with living orchids by commercial airplane via Bangkok to Copenhagen.

Quite clearly such method of work meant a manifold increase in the effective use of our time compared with the earlier expeditions' week long walks to reach the mountain localities.

During the expedition some 415 numbers of higher plants (apart from the orchids) were made, usually with 6-10 duplicates for distribution to the herbaria participating in "The Flora of Thailand Project", to this was added collections of mosses (191 numbers) and fungi (83 numbers). Further, some 400 numbers of orchids were collected, most of them brought alive to Copenhagen. As identification goes on together with material from other expeditions the results of this expedition will appear in the running series in Dansk Botanisk Arkiv and Dansk Botanisk Tidsskrift, and ultimately in "The Flora of Thailand", published in Bangkok. Below will be given a preliminary account of the botany of the individual localities.

**1. Northern part of the Doi Chik Chong massive, west of Pai.**  
(19°25,8' n. lat.; 98°18,8' e. long.)

The highest point of Doi Chik Chong, about 1936 m altitude, is situated some 11 km west of Pai at 19°24,5' n. lat. and 98°19,4' e. long. and was the one we aimed for when on February 16th we set off from the Mae Hong Song airstrip some 40 km to the west. The top itself and the higher levels of the surrounding ridges were covered by rather dense forest, but we found a small spot under cultivation by the hill tribes a short way to the north, where landing was possible at 1500 m altitude. Here the camp was established and easy walks were possible from here on the ridges; the 1936 m top itself could be reached after a few hours walk.

As elsewhere in the whole area visited during the expedition, the original forest had been very much depleted through slash-burning so that many of the ridges lay bare and grass-covered. Nevertheless,

original forest was found both around the highest top and along the ravines on the mountain sides. The forest in this area may be classified as Hill Evergreen or Lower Montane forest. At 1600-1750 m elevation trees forming the upper crown canopy belong to *Castanopsis tribuloides*, *C. argyrophylla*, *Quercus semiserrata*, *Lithocarpus spicatus*, *Cinnamomum cassia* and *Podocarpus nerrifolius*, with *Betula alnoides* and *Pinus insularis* occurring sparsely. The under-storied trees are *Engelhardia spicata*, *Helicia formosana*, *Abarema montana*, *Turpinia pomifera* with species of *Diospyros* and *Symplocos*. The ground flora is composed of *Desmodium floribundum*, *Smilax china*, *Setaria plicata* and species of *Vernonia* together with species of *Acanthaceae* and *Zingiberaceae*.

At the higher elevation, 1750-1850 m, trees forming the upper storey are *Manglietia garrettii*, *Lophopetalum wallichianum*, *Lithocarpus oxycarpus*, and a species of *Calophyllum*; *Betula alnoides* is found scattered, attaining a large size of some 35 m in height and 180 cm girth. The under-storey is composed of *Pyrenaria*, *Acer*, *Wendlandia*, *Symplocos*, *Rapanea* and *Camellia*. The undergrowth is luxuriantly constituted by *Polygonum chinense*, *Evodia gracilis*, *Boeninghausenia albiflora*, and *Setaria plicata* together with *Alpinia*, *Rubus*, *Smilax*, *Elscholtzia* and some members of the *Acanthaceae*; in small clearings the bracken, *Pteridium aquilinum* and a grass, *Microstegium vagans*, fill up the spaces. Epiphytes are abundant, such as *Agapetes hosseusii*, *Rhododendron veitchianum*, *Wightia speciosissima* and a great number of orchids, ferns, mosses and hepatics.

On the grassy slopes *Hypericum patulum*, *Abarema glomeriflora* and *Mahonia siamensis* occur among grasses of the genera *Hyparrhenia*, *Eulalia*, *Themeda*, *Microstegium*, *Capillipedium*, and *Arundinella*. Frequently occurring is *Spodiopogon lacei*, this is a second record for Thailand, the plant hitherto only found at Doi Chiang Dao, less frequent *Thysanolaena maxima* and *Imperata cylindrica* were found.

In the shady valleys *Mahonia siamensis* attains the large dimension of some 8 m in height. Along the stream a new species of *Berchemia* was found growing in a boggy area together with bamboos of the genus *Gigantochloa* and *Teinostachyus griffithii*; also *Prunus*



*cerasoides* is frequent here. Deep down in a narrow and steep valley *Caryota urens* formed a beautiful stand attaining some 40 m in height. The regeneration of this regal palm is successful and if the cutting and burning is continuously carried on the palm will undoubtedly fill up the mountain gorges. Together with the seedlings of this palm *Alocasia indica*, *Trevesia ficifolia*, *Musa rutilans*, *Angiopteris evecta* and ferns of the genera *Pteris* and *Tectaria* are frequent. *Balanophora indica* was found feeding on roots of *Tetrastigma*.

Along lower ridges of 1200-1400 m elevation intrusions of pine and oak forest can be discerned; the composition of this edaphic association is constituted by *Pinus insularis*, *Quercus helferi*, *Lithocarpus fenestratus*, with *Helicia formosana*, *Tristania rufescens* and *Vaccinium sprengelii* forming the lower canopy. The ground is often rocky, with a rather poor undergrowth consisting of *Lilium primulinum*, *Cycas pectinata*, *Brainia insignis*, *Inula cappa*, *Themeda arundinacea*, *Thysanolaena maxima* together with *Eulalia*, *Arundinella*, *Carex*, *Teucrium* and *Indigofera*.

Around 80-90 species of orchids were found. Notable were the large number of *Dendrobiums* (*D. parishii*, *D. chrysotoxum*, *D. falconeri*, *D. bellatulum*, *D. sutepense*, *D. bicameratum*, *D. chrepidatum* and others), while members of the *Vanda-Arachnis* group were rather rare (*Diploprora truncata*, *Gastrochilus bellinus*, *Aerides crassifolia*). On the isolated small trees along the crest of the mountain *Ione salweenensis* were in flower everywhere, also *Ione racemosa* (cfr. Seidenfaden 1969A:227) was quite common. Among the *Bulbophyllums* only *B. suavissimum* flowered profusely, also a single plant of *B. tripudians* (cfr. Seidenfaden 1970 in mss.) was found flowering. New to Thailand was the occurrence of *B. leopardinum*, hitherto only found in Sikkim and Khasia; it flowered in Copenhagen the following September (cfr. Seidenfaden 1970 in mss.). An interesting find was also that of *Oberonia langbianensis* which had hitherto been found only once in Vietnam (cfr. Seidenfaden 1969B:123). Ground orchids were nearly absent this time of the year, however, in the dark evergreen forest near the top were found a few flowering specimens of *Cheirostylis*

*griffithii* (cfr. Seidenfaden 1969B : 111). Profusely covering the trees everywhere were *Pholidota articulata*, *Otochilus fusca* and a *Coelogyne* of the *Proliferae* section. Many of the orchids from this locality have not yet been identified.

The locality was visited from 16th to 20th February.

## 2. Pang Mapha

(19°32' n. lat.; 98°13,5' e. long.)

This is not a mountain locality. During our study of the maps we were surprised to find in this area which is situated about 40 km north east of Mae Hong Song a system of several small streams joining in a rather conspicuous river flowing towards WSW for a few km, then suddenly disappearing without an outlet. The whole configuration of the surface showed this area to be karst-like in nature, which attracted our curiosity. The helicopter sat us down on a sandbank in the river at 560 m altitude quite near to a police station situated at the old cart trail between Pai and Mae Hong Song, and we stayed in this area from 23 to 28 February.

The forest of this area as a whole belong to the deciduous type, the Dry Upper Mixed Deciduous. It is composed of *Tectona grandis*, *Xylia kerrii*, *Melanorrhoea glabra*, *Vitex limonifolia*, *Pentacme suavis*, *Shorea obtusa*, and *Dipterocarpus tuberculatus*, other associated species are *Quercus mespilifolioides*, *Terminalia alata* and *Schleichera oleosa*. The ground floor is covered by a dense formation of *Sorghum nitidum* and *Themeda triandra*. Lime-stone boulders are a general phenomenon of this forest, among which *Phoenix acaulis*, *Careya arborea*, *Bombax albidum*, *Bambusa tulda*, and *Dendrocalamus strictus* are frequent. Teak (*Tectona grandis*) in this area comes up to 780 m altitude.

In the valley of about 700-800 m elevation a different facie of vegetation occurs, the Moist Upper Mixed Deciduous forest, where *Tectona grandis*, *Xylia kerrii*, *Terminalia alata*, *T. chebula*, *Schleichera oleosa*, *Lagerstroemia calyculata* and *L. venusta* are dominant; associated species are *Mangifera sylvatica*, *Lagerstroemia macrocarpa*, *Phyllanthus*



*emblica* and *Bauhinia variegata* together with *Bambusa tulda* and *Dendrocalamus membranaceus*.

Towards northwest beyond the saddle in direction of Mae Suya at about 600-800 m elevation the vegetation gradually changes into the Dry Evergreen forest with limestone outcrops, where *Quercus mespilifolioides*, *Q. kingii*, *Mangifera sylvatica* and *Azelia xylocarpa* are dominant. Along the roadside *Rubus dielsianus*, a trailing thorny species, was collected for the first time in Thailand. *Dioscorea kerrii*, a not common species, was collected here, the identification is based on a plant grown from bulbils in the Botanical Gardens hothouses in Copenhagen. In the shady valley a species of *Aristolochia* with large fluted fruit on a woody stem was found, this interesting plant is presumably a new species. Along the foot of limestone formations large-clumped bamboo possibly belonging to the genus *Cephalostachyum* was frequent.

Along the stream *Salix tetrasperma* is frequent together with *Duabanga grandiflora*, *Anthocephalus cadamba*, *Broussonetia papyrifera* and *Aesculus assamica*; *Parkia leiophylla* was also found scatteringly. *Arundo donax* and *Saccharum spontaneum* form thick bands along the open banks.

About a hundred orchids were collected in the valley and on the surrounding slopes up to about 850 m altitude. It was a quite varied flora with species of many different genera, many of which are as yet unidentified. *Dendrobium* was not very common, *D. parcum* perhaps the species most commonly met with. A small *Chiloschista* with brown flowers may prove to be a new species. *Pelatantheria insectifera*; found only once before in Thailand (cfr. Seidenfaden 1969B: 152) was found in a few specimens, also *Vanda coeruleascens* which seems to be pretty rare in Thailand. *Vanda parviflora* was rather common, and also several *Sarcanthus* species (*S. recurvus*, *S. siamensis*, *S. mirabilis*, and the new *S. tricornis* (Seidenfaden 1970 in mss.)

### 3. Doi Khun Huay Pong.

(18°58,8' n. lat.; 98°10' e. long.)

This is one of the highest mountain massives in northwestern Thailand situated just west of the headwaters of the Mae Chaem river, some 45 km southeast of Mae Hong Song. We aimed for the highest point which we believe to be about 1936 m altitude, but had some difficulty finding a place free and large enough for the helicopter; following the ridge north from the top we found a recently burned-out saddle at about 1800 m altitude where the camp was established. Here as elsewhere in the North we found the trails of the hill tribes following the crests of the ridges making excursions easy in the surrounding area. It was an unforgettable sight just after the landing to find the moss covered tree trunks everywhere completely covered with the large flowered white *Dendrobium infundibulum*. To the east of the N-S ridge was quite good and undisturbed evergreen forest of the Lower Montane type very rich in species; as shown by the evenly close canopy the forest here is generally in a much better condition than observed elsewhere during our trip. The upper-storied trees are *Manglietia garrettii*, *Cinnamomum cassia*, *Myrica esculenta*, *Acer garrettii*, *Betula alnoides*, *Lithocarpus spicatus*, *L. aggregatus*, *Quercus glabricupula*, *Castanopsis acuminatissima*, *C. armata* and *Calophyllum*; the lower storey is composed of *Actinidia*, *Turpinia*, *Machilus*, *Symplocos*, *Pyrenaria*, *Elaeocarpus*, *Engelhardia*, *Rhus*, *Helicia*, *Lindera*, *Phoebe* and *Zanthoxylum*. The common thorny climbers are *Rubus* and *Smilax*; *Gnetum montanum* is an extensive liane. We found *Symingtonia populnea* which was formerly known from Doi Inthanond, and *Sasia olacifolia* was found for the first time in Thailand. Also the epiphytic *Agapetes variegata* was found for the first time in Thailand.

The ground floor is covered with ferns of the genera *Microlepia*, *Colysis*, *Microsorium*, *Asplenium*, *Dryopteris*, *Coniogramme*, and other herbaceous plants such as *Senecio scandens*, *Catimbum speciosum*, *Carex baccans*, *Lobelia pyramidalis*, *Polygonum chinense* and *Dichroa febrifuga*. *Balanophora indica* var. *minor* is frequent. In old clearings *Carex*



*baccans*, *Catimbum speciosum* and *Pteridium aquilinum* form big tufts all over the area, among which *Rubus* and *Glochidion* are growing. The bamboo *Melocalamus compactiflorus* is common along open slopes and in the valleys.

Among the about 70 species of orchids collected were many new and interesting species, several of which have not yet been identified. A very beautiful *Pleione* was found at about 1910 m, it flowered in the autumn in Copenhagen. Among the new species are *Bulbophyllum sanitti* (Seidenfaden 1970 in mss.) a plant near *B. tripudians* which was named after our helicopter pilot, and *Asco-centrum semiteretifolium* (Seidenfaden 1970 in mss.) found near the camp just a few minutes before the helicopter left for the last time from the locality. Among the rare orchids met with could be mentioned *Bulbophyllum helenae* and *B. bisetum* (cfr. Seidenfaden 1970 in mss.), *Armadorum siamensis*, *Robiquetia fuerstenbergiana*, *Uncifera thailandica*, *Gastrochilus hoyopse*, *Ione annamensis* and *Oberonia obcordata*. In the dark evergreen jungle it was a big event, besides *Paphiopedilum villosum*, to find the large *Cymbidium lowianum* just beginning to flower. On the ridges *Thunia alba* was very common and must be a beautiful sight during the rainy season.

Generally speaking this mountain gave us a picture of what the forests of Thailand must have been like before they got so completely disturbed through the slash-burning technique of the hill tribes.

We stayed at Khun Huay Pong from March 2nd to 7th, and from there the helicopter took us to Mae Sarieng, a trip of about 100 km.

#### 4. Doi Paepoe, about 90 km northwest of Tak.

(17°10' n. lat.; 98°28,5' e. long.)

The mountains east of the Burmese border between Mae Sarieng and Mae Sot are some of the most inaccessible and unknown in Thailand. We got a little into them when, in 1964, we walked for several days towards west and southwest from Omkoi, a small village

which can be reached by jeep in the dry season from the Hot-Mae Sarieng road. For this year's expedition we had on the maps singled out a mountain massive about half way between Omkoi and Mae Sot, stretching some 6 to 8 km in a NW-SE direction. Setting out for reconnaissance from Mae Sarieng we passed over areas that from the air looked highly interesting with many complicated valley systems with large patches of evidently quite undisturbed jungle. Local orientation, however, was very difficult, and as we feared running out of gasoline we decided to proceed directly to the airport in Tak and make a new start from there; the heavy equipment being sent by truck from Mae Sarieng to Tak.

On March 12th, then, we set out from Tak in a northwesterly direction and after a flight of some 90 km found fine landing possibility on a mountain ridge at about 1300 m altitude. Frankly, we do not know exactly where we were, but the above indicated geographical coordinates are not quite wrong; according to the local hill tribes the nearest village is called Ban Moglo, a name not found in the maps. A lot of burning had gone on in this area, but here and there we found small patches of reasonably undisturbed forest of the Lower Montane type quite rich in species. Here members of the *Fagaceae* are represented by *Castanopsis armata*, *C. argyrophylla*, *C. acuminatissima*, *C. tribuloides*, *Lithocarpus xylocarpus*, *L. spicatus* var. *brevipetiolatus* and *Quercus rex*. Besides these species, *Cinnamomum cassia*, *Sterculia angustifolia*, *Schima wallichii*, *Styrax benzoides* and a species of *Calophyllum* occur. *Hydnocarpus kurzii* ssp. *australis* is described for the first time on the basis of collections from this locality (Dr. Sleumer 1970 in mss.). There were a number of woody epiphytes characteristic for this type of forest such as *Agapetes variegata* and *A. parishii*; and *Vaccinium ardisioides* should be noted as a first record. The common epiphytic ferns were *Pyrrosia mollis* and *P. lingua*. Besides the epiphytes mentioned a number of parasites was met with, such as *Scurrula*, *Helixanthera* and *Henslowia sessile*.

In old clearings and open ridges *Engelhardia spicata*, *Betula alnoides*, *Symplocos henschelii*, *Wightia speciosissima*, *Abarema montana* and species of *Glochidion*, *Meliosma* and *Artocarpus* are scattered



among tall grasses belonging to the genera *Neyraudia*, *Themeda* and *Thysanolaena*.

In the valley *Aesculus assamica* is frequent by streams, and *Acer villosa* was recorded for the first time in Thailand. Along the streams in the evergreen forest the undergrowth is dense and composed of herbaceous species belonging to the genera *Musa*, *Catimbum*, *Begonia*, *Peliosanthes*, *Curculigo*, and members of the *Maranthaceae* together with ferns of the genera *Dryopteris*, *Athyrium* and *Angiopteris*.

About 50 species of orchids were found, and here again *Dendrobium* species dominated (*D. chrysanthum*, *D. devonianum*, *D. falconeri*, *D. infundibulum*, *D. pierardii*, *D. thyrsiflorum*, *D. wardianum*, and others). *Bulbophyllum tripudians* were found again in a single specimen, and also *Ione racemosa*. A very large *Vanda* was found flowering; we call it *V. roxburghii* for the time being, later investigations may show that it should rather be classified as a variety of *V. denisoniana*.

#### 5. South of the Upper Reaches of Huay Khao Laem

(16° 00,4' n. lat. ; 99° 11,2' e. long.)

As our last mountain locality we had chosen a massive about 60 km south of Tak, sometimes called Doi Waphoe Pricho on some of the older maps. When flying south from Tak on March 18th we soon had difficulty with orientation, but rightly located some quite high mountains 60-70 km south of Tak. Unlike most of the other mountainous areas we had crossed during our flights, these tops were so densely covered by jungle that we could not find a single place to put down our helicopter. Having proceeded some 90 km south from Tak, the gasoline situation compelled the helicopter to turn back; before that we were put down on a lalang-covered slope at about 1000 m altitude, a rather bumpy landing due to termite hills covered by the grass. We later found our position to be the one indicated above, separated from the high mountains to the North by a deep valley, making access to higher altitudes nearly impossible, and generally we were rather hampered in our movements during the following days. We could see the primary Lower Montane forest type with a continuous crown canopy similar to that of Doi Khun Huai Pong to the North, but collections had to be confined to 900-1000 m elevation where Dry Evergreen forest dominated. Species found in this forest were *Cephalotaxus griffithii*, *Pterygota alata* and members



of the genera *Elaeocarpus*, *Pterospermum*, *Artocarpus*, *Calophyllum*, *Lithocarpus*, *Castanopsis* and *Quercus*, also *Hydnocarpus kunzii* ssp. *australis* were found again. Along the streams *Aesculus assamica*, *Duabanga grandiflora* and *Anthocephalus cadamba* were frequent together with the big bamboo *Dendrocalamus hamiltonii*; other species were *Talauma hodgsonii* and the palm *Livistona cochinchinensis*. In old clearings furthermore *Garuga pinnata* and *Trema orientalis*, *Duabanga grandiflora* and *Anthocephalus cadamba* were scattered; the former two being pioneers in the hilly country.

As we never got above 1100 m altitude, the orchids were not very common, only about 30-35 species were collected. Among these, *Hetaeria rubens* is a new record for Thailand (Seidenfaden 1970 in mss.). Interesting was also the occurrence of the large saprophytic *Galeola kuhlii* (Seidenfaden 1969 B: 104). We collected quite a few ground orchids such as *Calanthe triplicata*, *Phajus* sp., *Anoectochilus* sp., *Malaxis* spp. *Zeuxine* sp. and *Habenaria* sp.; also several of the epiphytic orchids collected have not yet been identified.

On the accompanying map besides the five above localities we have indicated two localities, visited on short trips by jeep from the helicopter bases. One is Pang Mu, just north of Mae Hong Song (19°20,8' n.lat.; 97°58,2' e.long), visited on March 1st; only a few plants were collected then, but we have inserted the locality in the map because we have visited the place on earlier expeditions so the name will appear on several of our labels. The other is the mountain area west of Tak around the village Ban Mussoe on the road to Mae Sot, also a locality we have visited before; this time collections were made in a river valley about 28 km west of Tak at about 850 m altitude (16°48' n.lat.; 98°54' e.long.) and in dry dipterocarp forest at about 620 m altitude some 38 km west of Tak (16°47' n.lat.; 98°49' e.long.). The evergreen forest along the streams are characteristic of the Dry Evergreen type, the showy *Aesculus assamica* and the palm *Arenga pinnata* are frequent. A graceful species, *Nimiria siamensis* was found for the second time, the type specimen was collected by Kerr at Sisawat, Kanchanaburi. Seeds of this plant were collected and germinated in Bangkok, but the plants do not grow well outside its habitat. In the Dry Deciduous Dipterocarp forest, *Dipterocarpus tuberculatus* is the dominant species. Among the orchids collected mention should be made of the large *Goodyera fumata*, first record for



Thailand (later a specimen was found in the Ames herbarium among some unidentified collections made by Garrett (Seidenfaden 1969 B: 108). There were many *Dendrobiums* in the Dipterocarp forest, interesting was the rich occurrence of the rare *Dendrobium aphrodites*.

The scientific members of this expedition were from the Thai side Tem Smitinand, Director of the Forest Herbarium, and from the Danish side Bertel Hansen and Gunnar Seidenfaden; we were accompanied as usual by Bunnak Sangkhachand, Senior plant collector of the Forest Department and also by Damrongsak Praphat, our excellent tree-climber. The helicopter crew consisted of:

Captain Sanit Supavacharayon, Agricultural Aviation Division Pilot

Lieutenant Chawvalit Pattamapitul, Agricultural Aviation Division Pilot

M.Sgt.Udomlert Klanprasert, Helicopter Mechanic Flight

M.Sgt.Amnuay Khomkon, Helicopter Mechanic Flight

M.Sgt.Issara Wongsont, Technician Electronic

Mr.Virach Ratanavaraha, Radio Operator.

Part of the cost on the Danish side was covered by a grant from the Rask Oersted Foundation, making possible the participation of Bertel Hansen. The expenses on the Thai side were covered through a grant from the National Science Council of Thailand.

We are most thankful to the Thai Government for putting at our disposal the excellent helicopter with its most experienced personnel and for covering all costs in this connection. The present Minister of Agriculture M.R. Chakratong Tongyai took a most personal interest in the whole venture and prepared a very careful timetable which proved a very valuable base for our work. The expedition owes a lot to the local forest officers who cordially helped to arrange for local transportation and accommodations. They are: Mr. Saran Mangkhlasthian, Divisional Forest Officer, Chiangmai, Mr. Phadet Khachon-amphaisut, D.F.O., Mae Sarieng, Mr. Saro Witakhamontri, Provincial Forest Officer, Mae Hong Song, Mr. Prasit Uthensut, D.F.O., Tak and Mr. Chitti Charuchari, Provincial Forest Officer, Tak.

**List of botanical localities and collection numbers**  
(for the geographical coordinates, see the text above)

Name of Locality	Dates :	Collection numbers;	
		Orchids	Other
Mae Hong Song	16.2	7001	12606
Doi Chik Chong 1450-1940m 1)	12-20.2	7002-7094	{ 12600-12701; 13015- 13064; 13181-13224
Pang Mapha 560-820m	23-28.2	7095-7198	{ 12702-12758; 13065- 13109
Pang Mu n.of Mae Hong Song	1.3	7199-7202	-----
Doi Khun Huay Pong 1540-1936m	2-7.3	7203-7277	{ 12759-12872; 13110- 13149; 13275-13282
Below Ban Mussoe w.of Tak 850-900m	11.3	7278-7285	-----
Doi Paepoe 1050-1450m	12-15.3	7286-7339	{ 12873-12950; 13150- 13166; 13283-13319
S. of Huay Khao Laem 850-1100m 2)	18-20.3	7340-7376	{ 12951-13000; 13167- 13180
Near Ban Mussoe 38 km w.of Tak 620m	22.3	7377-7398	13001-13014
Below Ban Mussoe 28 km w.of Tak	22.3	7399-7400	-----
Various localities	--	----	13320-13327

- 1) On the labels from the Copenhagen Botanical Museum called Doi Chong  
2) On the labels called Huai Krasa, which is 10-20 km NE of the correct location.

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